## REMARKS

In the Applicant's Amendment filed March 13, 2002, there was a reference to a new SEQ ID NO: 3 being added to the claims and Sequence Listing. This was an inadvertent error, since SEQ ID NOS: 1-9 are of record.

The foregoing amendments correct this error by adding the new sequence as new SEQ ID NO: 10. A new substitute Sequence Listing is enclosed in paper and computer readable form. The Examiner is requested to disregard the substitute Sequence Listing submitted with Applicant's last Amendment. The specification has also been amended to reflect the new SEQ ID NO.

New SEQ ID NO: 10 of the attached substitute Sequence Listing is the protein sequence of SEQ ID NO: 2. The paper and computer readable copies of the substitute Sequence Listing are identical. No new matter has been added.

Favorable consideration is respectfully solicited.

Respectfully submitted,

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE



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| In re application of | : | **Confirmation No. 1705** |
| Tadashi FUJII et al. | : | Docket No. 2001-0116A |
| Serial No. 09/762,230 | : | Group Art Unit 1652 |
| Filed February 5, 2001 | : | Examiner Christian L. Fronda |
| GENE PARTICIPATING IN THE PRODUCTION OF HOMOGLUTAMIC ACID AND ITS USE | : | |

THE COMMISSIONER IS AUTHORIZED TO CHARGE ANY DEFICIENCY IN THE FEE FOR THIS PAPER TO DEPOSIT ACCOUNT NO. 23-0975.

## AMENDMENT

Assistant Commissioner for Patents,
Washington, D.C. 20231

Sir:

Responsive to the Official Action dated December 13, 2002, please amend the above-identified application as follows:

## IN THE CLAIMS

Cancel without prejudice claims 1-15.

Please add the following new claims:

16. (Amended) An isolated nucleic acid sequence selected from the group consisting of: ~~(New)~~

(a) the nucleotide sequence of SEQ ID NO: 2 encoding a protein having piperidine-6-carboxylic acid dehydrogenase activity, or a complementary strand thereof;

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(b) a nucleotide sequence encoding a protein having the amino acid sequence of SEQ ID NO: 10 which has piperidine-6-carboxylic acid dehydrogenase activity, or a complementary strand thereof;

(c) a nucleotide sequence consisting of nucleotides 2855 to 4387 of SEQ ID NO: 2 encoding a protein having piperidine-6-carboxylic acid dehydrogenase activity, or a complementary strand thereof;

(d) a nucleotide sequence consisting of nucleotides 2077 to 4578 of SEQ ID NO: 2 encoding a protein having piperidine-6-carboxylic acid dehydrogenase activity, or a complementary strand thereof;

(e) a nucleotide sequence which has at least 70% homology with the nucleotide sequence of (c) encoding a protein having piperidine-6-carboxylic acid dehydrogenase activity, or a complementary strand thereof;

(f) a fragment of nucleotide sequence (a) or (b) encoding a protein having piperidine-6-carboxylic acid dehydrogenase activity, or a complementary strand thereof ; and

(g) a nucleotide sequence which hybridizes under stringent conditions to sequence (a), (b), (c), (d), (e) or (f).

17. (New) The isolated nucleotide sequence according to claim 16, which is the nucleic acid sequence of SEQ ID NO: 2 encoding a protein having piperidine-6-carboxylic acid dehydrogenase activity, or a complementary strand thereof.

(Amended)

18. (~~New~~) The isolated nucleotide sequence according to claim 16, which is the nucleotide sequence encoding a protein having the amino acid sequence of SEQ ID NO: 10 which has piperidine-6-carboxylic acid dehydrogenase activity, or a complementary strand thereof.

19. (New) The isolated nucleotide sequence according to claim 16, which is the nucleotide sequence consisting of nucleotides 2855 to 4387 of SEQ ID NO: 2 encoding a protein having piperidine-6-carboxylic acid dehydrogenase activity, or a complementary strand thereof.

20. (New) The isolated nucleotide sequence according to claim 16, which is the nucleotide sequence consisting of nucleotides 2077 to 4578 of SEQ ID NO: 2 encoding a protein having piperidine-6-carboxylic acid dehydrogenase activity, or a complementary strand thereof.

21. (New) The isolated nucleotide sequence according to claim 16, which is the nucleotide sequence which has at least 70% homology with the nucleotide sequence of (c) encoding a protein having piperidine-6-carboxylic acid dehydrogenase activity, or a complementary strand thereof.

22. (New) The isolated nucleotide sequence according to claim 16, which is the fragment of nucleotide sequence (a) or (b) encoding a protein having piperidine-6-carboxylic acid dehydrogenase activity, or a complementary strand thereof.

23. (New) The isolated nucleotide sequence according to claim 16, which is the nucleotide sequence which hybridizes under stringent conditions to sequence (a), (b), (c), (d), (e) or (f).

24. (New) The isolated nucleotide sequence according to claim 16, which is obtained from a bacterium belonging to Flavobacterium lutescens.

revealed that the thus obtained plasmid designated pCF111 which complements the first mutant and partly complements the second mutant and the plasmid designated pCF213 were apparently quite the same plasmid.

On the other hand, pCF111 and pCF213 were re-transformed into the first, second and third mutants, respectively, and homoglutamic acid-producing ability was checked. As a result, both plasmids complemented the first mutant, but only partly complemented the second and third mutant.

Based on the complementation test, it was revealed that in a plasmid sufficiently recovering the homoglutamic acid-producing ability of a homoglutamic acid productivity-lacking mutant, a gene participating at least in the production of homoglutamic acid, more specifically some gene other than lat is present.

Thus, not limited thereto, but as one of the "genes participating in the production of homoglutamic acid", there can be mentioned a gene which is contained in the insert part of plasmid pCF213 and encoding a protein having dehydrogenase activity. For example, this gene is present in the sequence shown in SEQ ID NO: 2, and the protein encoded thereby is shown in SEQ ID NO: 10.

On the other hand, a gene participating in the former conversion, namely encoding a protein having LAT activity according to the invention can be cloned as follows.

F. lutescens is cultured under a certain culture condition, the obtained strain is fractured, the fracture dispersion is centrifuged to remove the fractured cells, and from the thus obtained cell extract, the desired protein is isolated and purified by ultracentrifugaztion treatment, ammonium sulfate precipitation, desalting, ion exchange column chromatography, affinity column chromatography, ultrafiltration, electrophoresis, etc.

From the analytical results of the N-terminus amino acid